

IN THE CLAIMS:

Claim 1 (currently amended) A composite carrier of catalysts for propylene polymerization, comprising magnesium halide and particles of a silica material, said silica material having ~~with~~ an average particle size of less than 10 microns.

Claim 2 (original) The composite carrier according to claim 1, wherein the silica material has an average particle size of less than 5 microns.

Claim 3 (currently amended) The composite carrier according to claim 1, wherein the silica material has an average particle size of less than 1 ~~microns~~ micron.

Claim 4 (currently amended) A composite carrier of catalysts for propylene polymerization, which comprises ~~is~~ spheric particles obtainable by contacting magnesium halide with at least one or more electron donor ~~compounds~~ compound to form a solution, then mixing the solution with particles of a silica material to form a mixture, said silica material having ~~with~~ an average particle size of less than 10 microns ~~to form a mixture~~, and drying the mixture through spray drying process to form the spheric particles.

Claim 5 (original) The composite carrier according to claim 4, wherein the silica material has an average particle size of less than 5 microns.

Claim 6 (currently amended) The composite carrier according to claim 5, wherein the silica material has an average particle size of less than 1 ~~microns~~ micron.

Claim 7 (original) The composite carrier according to claim 4, wherein the spheric particles have an average particle size of from 5 to 60 microns.

Claim 8 (original) The composite carrier according to claim 7, wherein the spheric particles have an average particle size of from 10 to 40 microns.

Claim 9 (currently amended) The composite carrier according to claim 4, wherein the at least one electron donor compound ~~used during the preparation of the composite carrier~~ is selected from the group consisting of optionally halogenated aliphatic or aromatic alcohols, aliphatic ethers, cyclic ethers, optionally halogenated aliphatic alkylene oxides, aliphatic ketones, alkyl esters of aliphatic or aromatic carboxylic acids, hydrocarbyl or haloalkyl esters of phosphoric acid or phosphorous acid, and a mixture thereof.

Claim 10 (currently amended) The composite carrier according to claim 9, wherein the at least one electron donor compound is a system comprising at least one of optionally halogenated C₁₋₈ aliphatic alcohols and optionally halogenated C₇₋₁₀ aromatic alcohols.

Claim 11 (currently amended) The composite carrier according to claim ~~9~~ 10, wherein the at least one electron donor compound is at least one of optionally halogenated C₁₋₈ aliphatic

alcohols and optionally halogenated C₇₋₁₀ aromatic alcohols, or a mixture of said alcohol with a C₁₋₆ aliphatic ether, a C₃₋₅ cyclic ether, or a C₁₋₆ alkyl ester of aliphatic or aromatic carboxylic acid.

Claim 12 (currently amended) The composite carrier according to claim 4, wherein a molar ratio of the at least one electron donor compound ~~used during the preparation of the composite carrier~~ to magnesium halide is in a range of from 3:1 to 50:1.

Claim 13 (currently amended) A composite carrier of catalysts for propylene polymerization, ~~which is~~ comprising spheric particles obtainable by contacting magnesium chloride with an electron donor system consisting of an aliphatic alcohol and optionally an aliphatic ether, a cyclic ether, or an alkyl ester of aliphatic or aromatic carboxylic acid to form a solution, then mixing the solution with particles of a silica material to form a mixture, said silica material having an average particle size of less than 1 micron ~~to form a mixture~~, and drying the mixture through spray drying process.

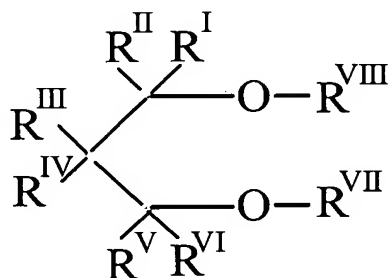
Claim 14 (original) The composite carrier according to claim 13, wherein molar ratio of the aliphatic alcohol to magnesium chloride is in a range of from 3:1 to 50:1, and molar ratio of the aliphatic ether, cyclic ether, or alkyl ester of aliphatic or aromatic carboxylic acid to magnesium chloride is in a range of from 0:1 to 20:1.

Claim 15 (currently amended) A catalyst component for propylene polymerization, comprising a

reaction product formed by reaction of (i) a composite carrier according to claim 4 comprising spheric particles obtainable by contacting magnesium halide with at least one electron donor compound to form a solution, then mixing the solution with particles of a silica material to form a mixture, said silica material having an average particle size of less than 10 microns, and drying the mixture through spray drying process to form the spheric particles, and

(ii) a titanium compound represented by formula $Ti(OR^2)_{4-m}X_m$, in which R^2 groups are identical or different, and are C_{1-14} aliphatic hydrocarbyl, X are is selected from the group consisting of F, Cl, Br and a mixture thereof, m is an integer of from 1 to 4, wherein prior to, during, or after the reaction between the composite carrier and the titanium compound, the composite carrier is treated using an internal electron donor compound.

Claim 16 (original) The catalyst component for propylene polymerization according to claim 15, wherein the internal electron donor compound is selected from the group consisting of esters of aliphatic polycarboxylic acid, esters of aromatic carboxylic acid, and 1,3-diether compounds having a general formula (I)



(I)

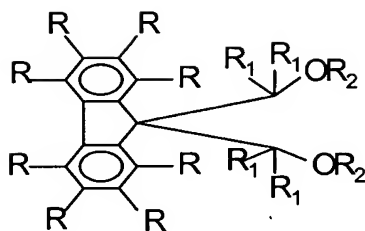
in which R^{I} , R^{II} , R^{III} , R^{IV} , R^{V} and R^{VI} are identical or different, and are selected from the group consisting of hydrogen, halogen, optionally halogenated linear or branched C_1 - C_{20} alkyl,

optionally halogenated C₃-C₂₀ cycloalkyl, optionally halogenated C₆-C₂₀ aryl, optionally halogenated C₇-C₂₀ alkaryl and optionally halogenated C₇-C₂₀ aralkyl, R^{VII} and R^{VIII} are identical or different, and are selected from the group consisting of optionally halogenated linear or branched C₁-C₂₀ alkyl, optionally halogenated C₃-C₂₀ cycloalkyl, optionally halogenated C₆-C₂₀ aryl, optionally halogenated C₇-C₂₀ alkaryl and optionally halogenated C₇-C₂₀ aralkyl, and R^I - R^{VI} groups can be bonded each other to form a ring, and mixture thereof.

Claim 17 (original) The catalyst component for propylene polymerization according to claim 16, wherein the internal electron donor compound is one or more selected from the group consisting of phthalates, malonates, succinates, glutarates, pivalates, and carbonates.

Claim 18 (original) The catalyst component for propylene polymerization according to claim 16, wherein in the 1,3-diether compounds having a general formula (I), R^{III} and R^{IV} are bonded each other to form an unsaturated fused ring structure, and hydrogen atoms on said fused ring structure are optionally substituted by one or more groups selected from the group consisting of halogen, optionally halogenated linear or branched C₁-C₂₀ alkyl, optionally halogenated C₃-C₂₀ cycloalkyl, optionally halogenated C₆-C₂₀ aryl, optionally halogenated C₇-C₂₀ alkaryl and optionally halogenated C₇-C₂₀ aralkyl.

19. The catalyst component for propylene polymerization according to claim 16, wherein the 1,3-diether compounds are compounds represented by a general formula (III)



(III)

in which R are identical or different, and are selected from the group consisting of hydrogen, halogen, optionally halogenated linear or branched C₁-C₂₀ alkyl, optionally halogenated C₃-C₂₀ cycloalkyl, optionally halogenated C₆-C₂₀ aryl, optionally halogenated C₇-C₂₀ alkaryl and optionally halogenated C₇-C₂₀ aralkyl;

R₁ are identical or different, and are selected from the group consisting of hydrogen, halogen, optionally halogenated linear or branched C₁-C₂₀ alkyl, optionally halogenated C₃-C₂₀ cycloalkyl, optionally halogenated C₆-C₂₀ aryl, optionally halogenated C₇-C₂₀ alkaryl and optionally halogenated C₇-C₂₀ aralkyl;

R₂ are identical or different, and are selected from the group consisting of optionally halogenated linear or branched C₁-C₂₀ alkyl, optionally halogenated C₃-C₂₀ cycloalkyl, optionally halogenated C₆-C₂₀ aryl, optionally halogenated C₇-C₂₀ alkaryl and optionally halogenated C₇-C₂₀ aralkyl.

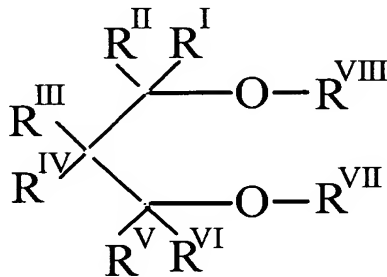
Claim 20 (currently amended) A catalyst component for propylene polymerization, which is obtainable through a process comprising the steps of:

- (i) preparing spheric composite carrier by contacting magnesium halide with one or more electron donor compounds to form a solution, then mixing the solution with particles of a

silica material to form a mixture, said silica material having an average particle size of less than 10 microns ~~to form a mixture~~, and drying the mixture through spray drying process;

(ii) reacting the composite carrier prepared in step (i) with a titanium compound represented by formula $\text{Ti}(\text{OR}^2)_{4-m}\text{X}_m$, in which R^2 groups are identical or different, and are C_{1-14} aliphatic hydrocarbyl, X are selected from the group consisting of F, Cl, Br and mixture thereof, m is an integer of from 1 to 4, and

(iii) prior to, during, or after the reaction between the composite carrier and the titanium compound, treating the composite carrier with an internal electron donor compound selected from the group consisting of esters of aliphatic polycarboxylic acid, esters of aromatic carboxylic acid, and 1,3-diether compounds having the following a general formula (I) as ~~defined in claim 16~~, and a mixture thereof



(I)

in which R^{I} , R^{II} , R^{III} , R^{IV} , R^{V} and R^{VI} are identical or different, and are selected from the group consisting of hydrogen, halogen, optionally halogenated linear or branched $\text{C}_1\text{-C}_{20}$ alkyl, optionally halogenated $\text{C}_3\text{-C}_{20}$ cycloalkyl, optionally halogenated $\text{C}_6\text{-C}_{20}$ aryl, optionally halogenated $\text{C}_7\text{-C}_{20}$ alkaryl and optionally halogenated $\text{C}_7\text{-C}_{20}$ aralkyl, R^{VII} and R^{VIII} are identical or different, and are selected from the group consisting of optionally halogenated linear or branched $\text{C}_1\text{-C}_{20}$ alkyl, optionally halogenated $\text{C}_3\text{-C}_{20}$ cycloalkyl, optionally halogenated

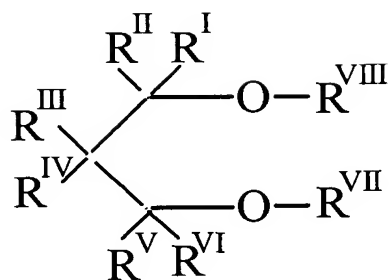
C₆-C₂₀ aryl, optionally halogenated C₇-C₂₀ alkaryl and optionally halogenated C₇-C₂₀ aralkyl, and R^I - R^{VI} groups can be bonded each other to form a ring.

Claim 21 (currently amended) A catalyst component for propylene polymerization, which is obtainable through a process comprising the steps of:

(i) preparing spheric composite carrier by contacting magnesium chloride with an electron donor system consisting of an aliphatic alcohol and optionally an aliphatic ether, a cyclic ether or an alkyl ester of aliphatic or aromatic carboxylic acid to form a solution, then mixing the solution with particles of a silica material having an average particle size of less than 1 micron ~~to form a mixture~~, and drying the mixture through spray drying process;

(ii) reacting the composite carrier prepared in step (i) with a titanium compound represented by formula $Ti(OR^2)_{4-m}X_m$, in which R² groups are identical or different, and are C₁₋₁₄ aliphatic hydrocarbyl, X are selected from the group consisting of F, Cl, Br and mixture thereof, and m is an integer of from 1 to 4, and

(iii) prior to, during, or after the reaction between the composite carrier and the titanium compound, treating the composite carrier with an internal electron donor compound selected from the group consisting of esters of aliphatic polycarboxylic acid, esters of aromatic carboxylic acid, and 1,3-diether compounds having the following a general formula (I) as ~~defined in claim 16~~, and a mixture thereof



(I)

in which R^I , R^{II} , R^{III} , R^{IV} , R^V and R^{VI} are identical or different, and are selected from the group consisting of hydrogen, halogen, optionally halogenated linear or branched C_1 - C_{20} alkyl, optionally halogenated C_3 - C_{20} cycloalkyl, optionally halogenated C_6 - C_{20} aryl, optionally halogenated C_7 - C_{20} alkaryl and optionally halogenated C_7 - C_{20} aralkyl, R^{VII} and R^{VIII} are identical or different, and are selected from the group consisting of optionally halogenated linear or branched C_1 - C_{20} alkyl, optionally halogenated C_3 - C_{20} cycloalkyl, optionally halogenated C_6 - C_{20} aryl, optionally halogenated C_7 - C_{20} alkaryl and optionally halogenated C_7 - C_{20} aralkyl, and R^I - R^{VI} groups can be bonded each other to form a ring.

Claim 22.(original) A catalyst for propylene polymerization, comprising reaction product of:

- (i) the catalyst component according to claim 15;
- (ii) an alkyl aluminium compound; and
- (iii) optionally, an external electron donor component.

Claim 23 (original) The catalyst for propylene polymerization according to claim 22, wherein the alkyl aluminum compound is represented by formula $AlR^3_nX_{3-n}$, in which R^3 are identical or different, and are linear, branched, or cyclic alkyl having 1 to 20 carbon atoms, X is halogen, $n=1, 2$ or 3 .

Claim 24 (original) The catalyst for propylene polymerization according to claim 23, wherein the external electron donor component is an organosilicone compound represented by formula $R^4_nSi(OR^5)_{4-n}$ in which n is in a range of from 0 to 3 inclusive, R^4 and R^5 are identical or different, and are alkyl, cycloalkyl, aryl, haloalkyl, R^4 can also be halogen or hydrogen atom.

Claim 25 (currently amended) The catalyst for propylene polymerization according to claim 24, wherein the ratio of solid catalyst component (i) to alkyl aluminum compound component (ii) is in a range of 1:5 to 1000, and the ratio of solid catalyst component (i) to external electron donor component (iii) is in a range of 1:5 to 1000:0 1:0 to 500, calculated on molar basis of titanium, aluminum and silicone.

Claim 26 (new). A catalyst carrier formed by a process consisting essentially of:

- (a) contacting magnesium halide with at least one electron donor compound to form a solution;
- (b) mixing the solution with particles of a silica material to form a mixture, said silica material having an average particle size of less than 10 microns; and
- (c) drying the mixture to form a composite catalyst carrier comprising spheric particles.

Claim 27 (new). A catalyst formed by a process consisting essentially of (a) providing the catalyst carrier of claim 26; and (b) reacting the catalyst carrier of claim 26 with a titanium compound represented by formula $Ti(OR^2)_{4-m}X_m$, in which the R^2 groups are identical or different, and are C_{1-14} aliphatic hydrocarbyl, X is selected from the group consisting of F, Cl,

Br and a mixture thereof, m is an integer of from 1 to 4, wherein prior to, during, or after the reaction between the composite carrier and the titanium compound, the composite carrier is treated using an internal electron donor compound.